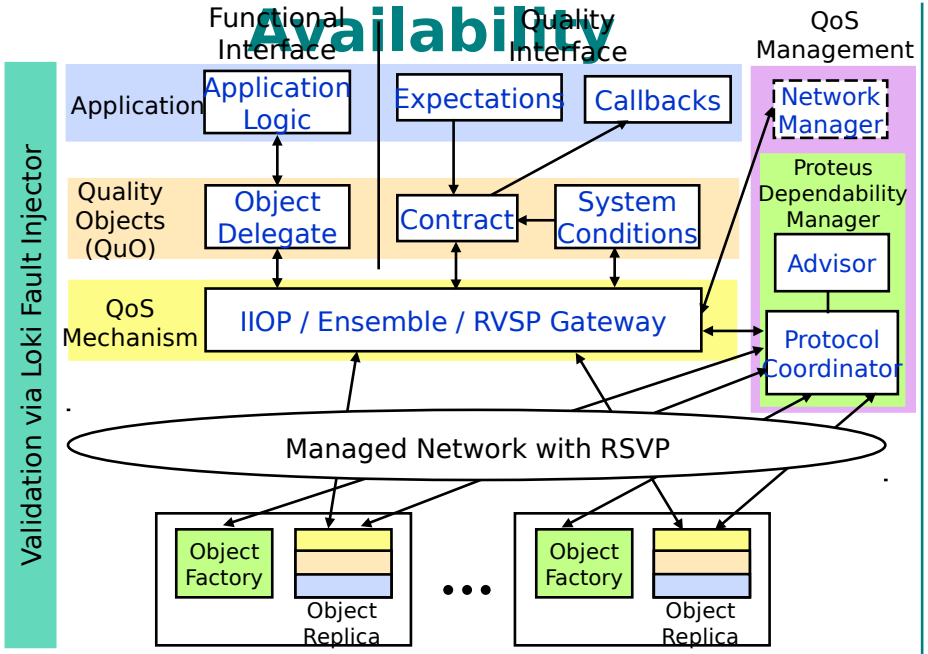
AQuA: Adaptive Quality of Service Availability



New Ideas

- Allows specification of both dependability- and bandwidth-related QoS via CORBA and socket APIs, using QuO infrastructure
- Provides blocks for building adaptive, dependable, distributed, object-oriented systems using commercial off-the-shelf components
- Supports system adaptation due to both faults and changes in an application's availability requirements
- Provides management of requested dependability using Proteus dependability manager
- Unifies network resource management over many users

Impact

- CORBA-based collaborative planning and C3 applications can now specify availability and bandwidth requirements and adapt when they are not met
- AQuA architecture and implementation can be used as a model by others for building reliable, object-oriented systems
- QuO, Proteus, and Loki can be used by other DOD researchers to manage QoS of distributed systems

Management InfoBase (MIB) establishes
d object computing (DOC) performance

Schedule

Sept. '96
- Develop and implement simple prototype QuO replication API
- Prototype and demonstrate components of AQuA architecture
- Develop fault injection techniques
- Develop testbed with adjustably-bad network resources

Sept. '97
- Validate AQuA architecture using Loki fault injector
- Complete AQuA design, implementation, and demonstration
- Adaptive availability for QuO contracts
- Develop IIOP/Maestro/Ensemble Gateway
- Develop Proteus dependability manager, object factories, and handlers

Sept. '98
- Design and implement major Loki fault injector components
- Support multiple, complex availability contracts, with runtime adaptation
- Develop CORBA Management InfoBase (MIB)
- Tolerate crash, value and time faults and multiple advisor policies in Proteus

Sept '99
- Study availability and bandwidth tradeoffs
- Support multiple replication schemes
- Complete Loki fault injector prototype

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